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October 27, 2023

VIA ELECTRONIC FILING

The Honorable Jocelyn G. Boyd
Chief Clerk and Executive Director
Public Service Commission of South Carolina
101 Executive Center Drive, Suite 100
Columbia, SC 29210

**Re: Application of Duke Energy Progress, LLC for Approval of Proposed Electric Transportation Pilot and An Accounting Order to Defer Capital and Operating Expenses
Docket No. 2018-322-E**

**Application of Duke Energy Carolinas, LLC for Approval of Proposed Electric Transportation Pilot and An Accounting Order to Defer Capital and Operating Expenses Docket
No. 2018-321-E**

Annual Electric Transportation Pilot Report Pursuant to Order Nos. 2020-645 and 2020-646

Dear Ms. Boyd:

Pursuant to the Public Service Commission of South Carolina's (the "Commission") Order Nos. 2020-645 and 2020-646 issued on October 15, 2020, in the above-captioned dockets, Duke Energy Carolinas, LLC and Duke Energy Progress, LLC hereby respectfully provide the Commission their Annual Electric Transportation Pilot Report.

Kind regards,

A handwritten signature in blue ink that reads "Katie M. Brown".

Katie M. Brown

Attachment

cc: Parties of Record (via email w/ attachment)

**Duke Energy Carolinas, LLC's and Duke Energy Progress, LLC's
Annual Electric Transportation Pilot Report
Pursuant to Order Nos. 2020-645 and 2020-646**

**Docket No. 2018-321-E
Docket No. 2018-322-E**

October 27, 2023

For informational purposes, pursuant to Order Nos. 2020-645 and 2020-646 in Docket Nos. 2018-321-E and 2018-322-E, respectively, Duke Energy Carolinas, LLC (“DEC”) and Duke Energy Progress, LLC (“DEP,” together with DEC, the “Companies”) file this Annual Electric Transportation (“ET”) Pilot Report.

I. Background

Through Order Nos. 2020-645 and 2020-646 in Docket Nos. 2018-321-E and 2018-322-E, which approved the Companies’ ET pilot programs (collectively, the “ET Pilots”), the Commission directed the Companies to:

- Conduct an ongoing stakeholder engagement process with interested parties in an effort to understand each party’s experience with the ET Pilots and the effectiveness of the ET Pilots;
- Host annual meetings to provide stakeholders with updates on the ET Pilots and permit stakeholders to ask questions and provide feedback;
- Document the annual stakeholder meetings and provide summaries to the Commission as part of the Companies’ annual and final ET Pilot report; and
- Submit to the Commission on an annual basis a report containing: (a) data on the number of site hosts flowing through Fast Charge Fees (“FCF”) to drivers, the number of site hosts using alternative pricing, and aggregate amounts of such fees collected by charger by year; and (b) data on the aggregate amount collected under

such arrangements by charger by year provided from site hosts offering alternative pricing mechanisms for drivers.

II. Stakeholder Engagement

Following a successful inaugural stakeholder engagement session on September 3, 2021, the Companies held a second stakeholder session on the ET Pilots on September 1, 2022, the details of which were shared in the Companies' 2022 report. The Companies held a third stakeholder session on the ET Pilots on October 6, 2023, and a fourth stakeholder session with pilot program participants and site hosts on October 17, 2023. As in 2021 and 2022, the Companies invited a diverse mix of over 200 stakeholders, including residential program participants, businesses, potential site hosts, and docket intervenors, among others. At the meetings, the Companies provided background information about the ET Pilots, including the plan for continued DEC/DEP Direct Current ("DC") Fast Charger deployment and details related to DEC's Residential Electric Vehicle ("EV") Home Charging Rebate and program. Attendees asked questions about how changing cellular technology could impact the operation of the Residential EV Charging program, how managed EV charging could affect grid congestion in the future, and how program costs were recovered. Participants also wanted to know if the charger sites have solar or battery storage and whether there are generators tied to the sites to provide support during storm evacuation. The slide deck for the stakeholder session is attached hereto.

III. Status of the Programs

The Commission approved the DC Fast Charge program for both Companies and the Residential EV Charging program for DEC in October 2020, through Order Nos. 2020-645 and 2020-646 in Docket Nos. 2018-321-E and 2018-322-E.

a. Park & Plug DC Fast Charging

As first reported in 2021, since the DC Fast Charge program was approved, the Companies conducted a Request for Proposals (“RFP”) for EV charging equipment hardware and network software. The Companies then targeted sites – to host two DCFC dispensers each – based on highway corridors, geographic spread, site hours, lighting/safety, and amenities at the locations, among other factors.

i. Update on Deployments

The Companies have executed site host agreements for all thirty sites to serve as home to the 60 DCFC dispensers approved by the Commission. Twenty of these sites are in DEC’s service territory, and ten of the sites are in DEP’s service territory. As demonstrated in the table below, of the 30 contracted sites, 21 have been commissioned, and an additional 9 are under construction.

Table 1. Status OF DCFC Deployments

	Approved by PSCSC	Commissioned	Engineering & Construction	Additional Contracted	Site Hosts Needed
Public DCFC	60 Dispensers ¹	42 Dispensers	18 Dispensers	0 Dispensers	None

Although the Company now has executed agreements in place for all thirty approved sites, the recruitment of site hosts took longer than anticipated, leading to delays in deploying DC fast charging (“DCFC”) stations. Most notably, some site hosts were reluctant to execute the required agreements because of included easements and liability waivers. This was found to be especially true with larger commercial organizations, such as national chains. In 2022, one entity with multiple sites under agreement requested to change the terms of its participation in the pilot. The parties were unable to reach mutually-agreeable terms, so the Companies were forced to recruit replacement site hosts, which contributed toward the deployment delay.

¹ Referred to in the tariffs as DCFC “stations.”

ii. Concerns with Supply Chain

While there have been concerns with obtaining conduit, distribution panels, and meter bases since the time of the Commission’s orders approving the ET Pilots, at this time, the national shortage of transformers is the only notable supply chain constraint facing the ET Pilots. As of this report, all sites are expected to have a transformer and, thus, be commissioned before initial pilot timeframe ends in January 2024. However, the Companies must also respond to changing conditions – such as extreme weather events affecting service to customers. As a result, it is possible that transformers currently assigned to Park & Plug sites could be reallocated, for example, in restoration efforts.

iii. Statistics from Installed Charger Base

The Companies are pleased to provide an update on the trends and statistics for usage of the Park & Plug pilot chargers deployed thus far. Figure 1 shows the total number of charging sessions on the system per month beginning in September of 2021 when the first site was commissioned and continuing through July of 2023. Session volume follows an increasing trend over time and sharply increases after the first quarter of 2023.

Figure 1. Charging Sessions on Park & Plug Network Over Time

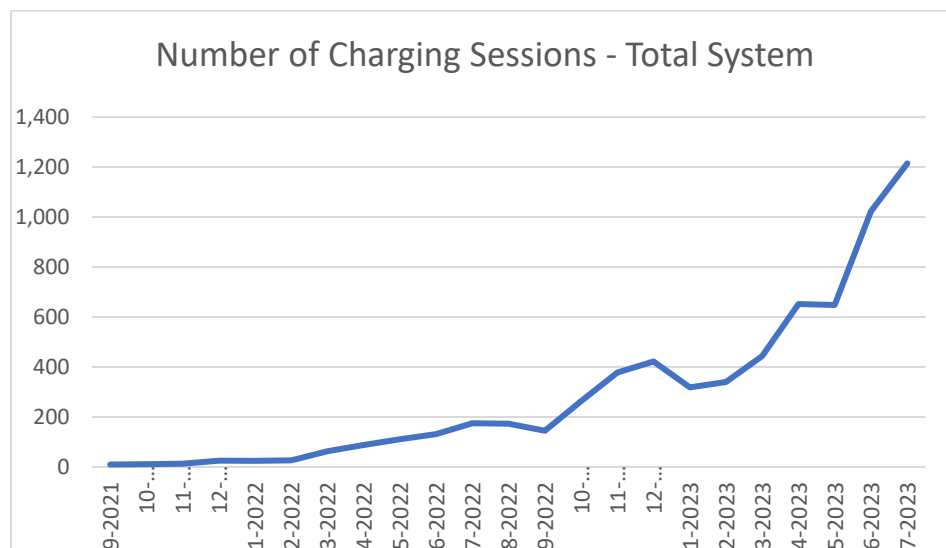
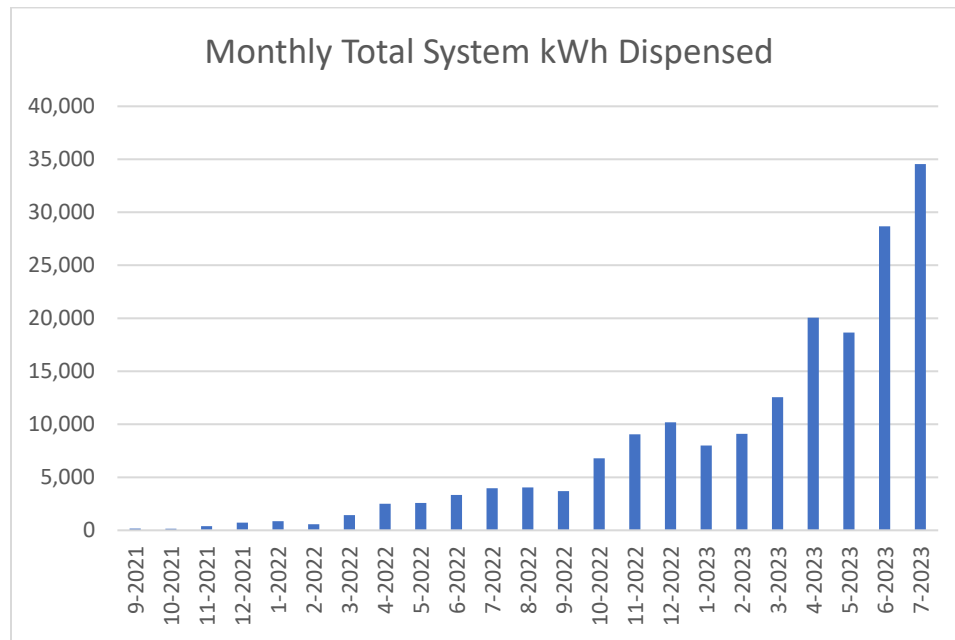


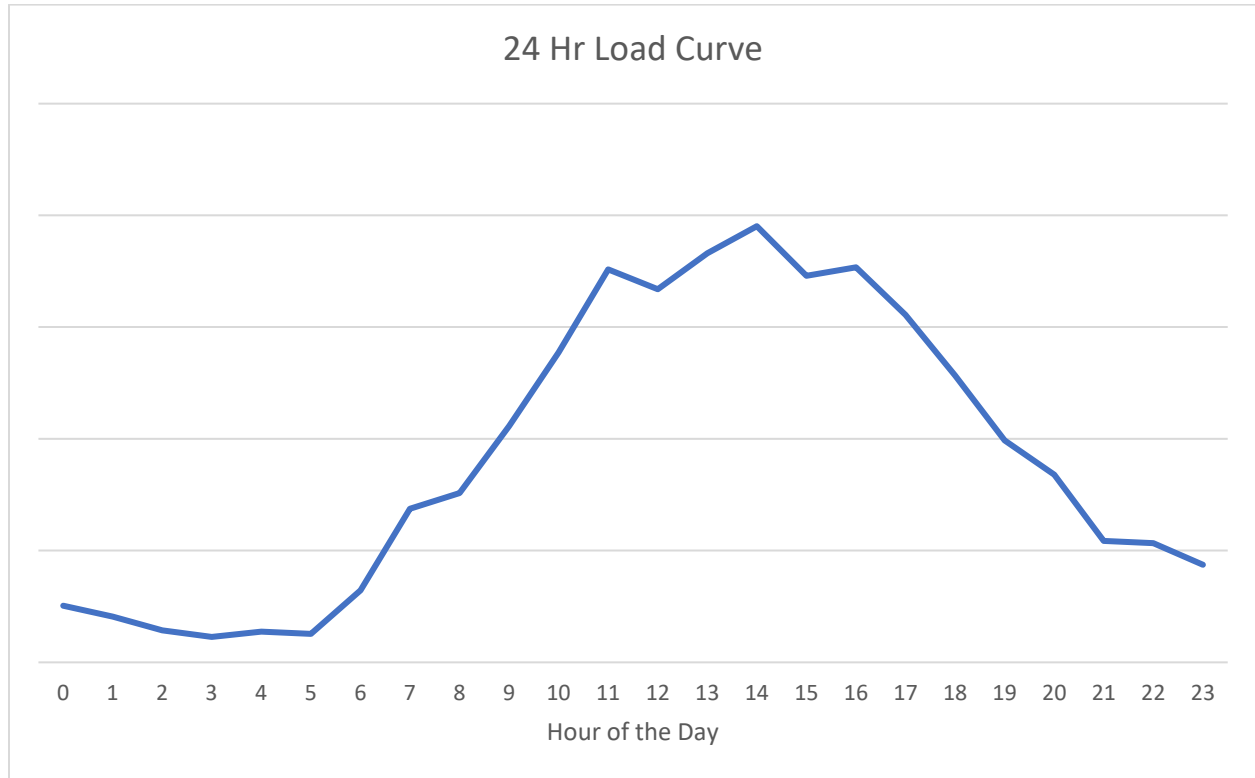
Figure 2 shows the monthly increase in kWh dispensed by the South Carolina Park & Plug system that corresponds with additional charging session count. In total, drivers in South Carolina have consumed 182 MWh to charge their EVs. Assuming 3.5 miles driven per kWh dispensed, the SC Park & Plug system has enabled well over 600,000 miles of EV driving.

Figure 2. Energy (kWh) Dispensed on Park & Plug Network Over Time



Average daily load curves have also taken shape. As shown in Figure 3 below, usage is notable during normal hours in which drivers would travel long distance and thus have need for DC fast charging. Conversely, usage is nearly non-existent overnight when most drivers tend to use their at-home charging solution.

Figure 3. Average Daily Load Shape of Park & Plug DC Fast Charger



Finally, Table 2 below provides information on fees collected by year for each site that is online as well as the driver fee approach applied at the site by the site host. Notably, none of the site hosts the Companies have entered into agreements with have opted for alternative pricing from the FCF filed by the Companies. While it is worth noting that certain sites have not been online long enough to establish consistent volume, the chargers at Lynchburg, Spartanburg, Hamer, Powdersville, and Inman are demonstrating the highest utilization to date. In total, just over \$63,700 in revenue has been collected at Park & Plug sites thus far in the pilot program.

Table 2. Revenues Per Park & Plug Site Per Year

Site Location	Date Commissioned	Fee Structure	Fees Collected 2021	Fees Collected 2022	Fees Collected 2023
Belton	04/7/2023	FCF	None	None	\$177
Bishopville	04/13/2023	FCF	None	None	\$1,812
Cheraw	03/21/2023	FCF	None	None	\$301
Fountain Inn	03/16/2023	FCF	None	None	\$1,451
Greenwood	03/28/2023	FCF	None	None	\$1,003
Hamer	09/17/2021	FCF	\$524	\$5,393	\$6,159
Inman	02/17/2022	FCF	None	\$2,184	\$4,458
Lake City	04/26/2023	FCF	None	None	\$599
Lancaster	09/27/2022	FCF	None	\$167	\$2,076
Latta	06/20/2023	FCF	None	None	\$700
Lynchburg	12/15/2021	FCF	None	\$3,256	\$9,321
McBee	11/23/2022	FCF	None	\$168	\$1,326
Mullins	10/21/2021	FCF	None	\$804	\$1,400
Ninety Six	03/30/2023	FCF	None	None	\$242
Powdersville	08/02/2022	FCF	None	\$1,666	\$5,490
Richburg	08/04/2023	FCF	None	None	\$67
Spartanburg	06/17/2022	FCF	None	\$3,780	\$6,518
Sumter	06/06/2023	FCF	None	None	\$768
Travelers Rest	04/10/2023	FCF	None	None	\$952
Walhalla	04/03/2023	FCF	None	None	\$566
York	04/07/2023	FCF	None	None	\$379

b. Residential EV Charging

The DEC Residential EV Charging pilot program rewards customers with a \$40 quarterly credit if they routinely charge off peak while avoiding charging on peak. The program allows three “strikes” (on-peak charges) a month before participants lose their reward. There are currently 245 customers participating in the pilot, and participation peaked at 310 in the 4th quarter of 2021. Since that time, customer participation has decreased to 245 primarily due to customers moving out of the Companies’ territory, customers selling their EVs, or because the Companies were not able to obtain the necessary charging behavior data.

i. Load Shift Results

During 2021—the first year of the pilot—the program shifted 71% of 2020 pre-program on-peak charging loads to off-peak. The majority of load shift occurred in the summer peak hours, and less impact was observed in the winter morning peak hours because most participants have completed their daily charge by that time.

Messaging to program participants has continued since the first year of program operation, and customers have responded by charging increasingly less during on-peak hours. As of 2023, there has been an 80.6% reduction in EV consumption during peak hours for participants compared to pre-enrollment. Figures 4, 5, and 6 below show the successful shift of EV charging for participants from on-peak to off-peak hours as well as the increasing shift over the life of the pilot.

Figure 4. Off Peak Credit Reduction in Winter On-Peak Hours

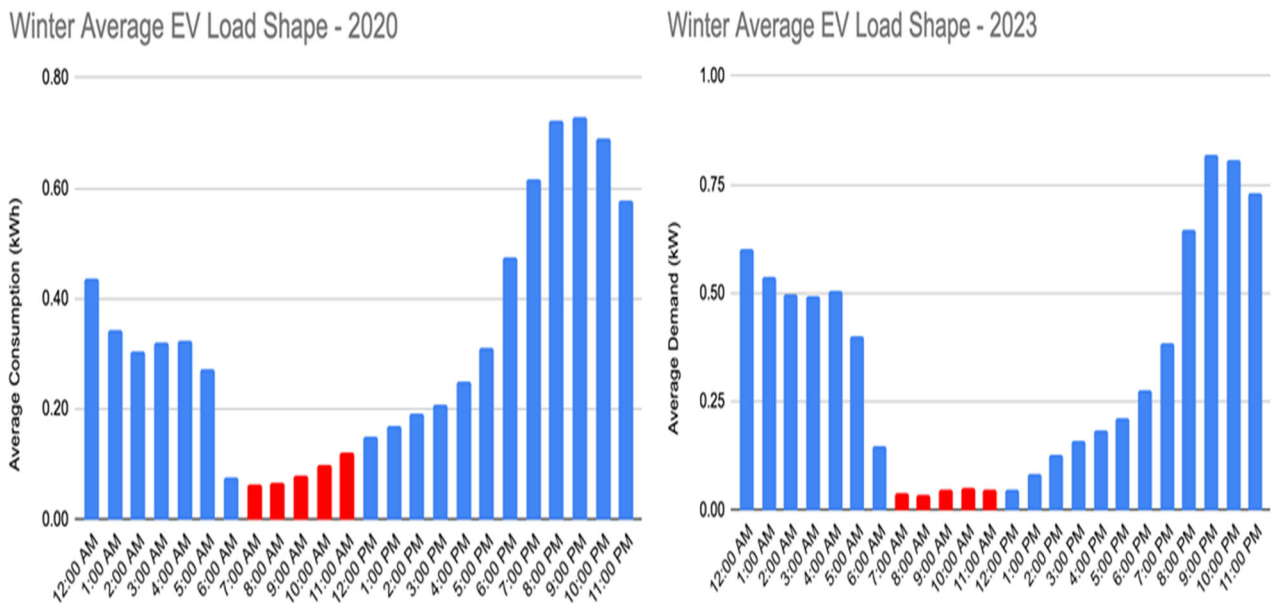


Figure 5. Off Peak Credit Reduction in Summer On-Peak Hours

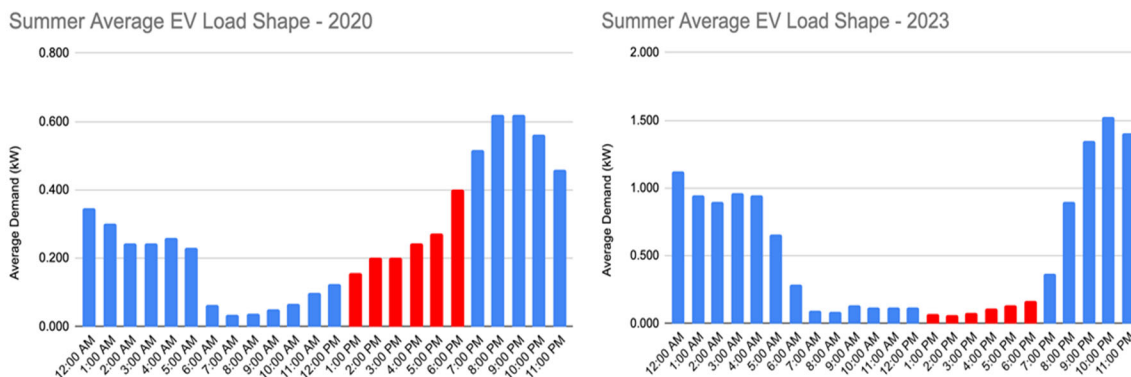
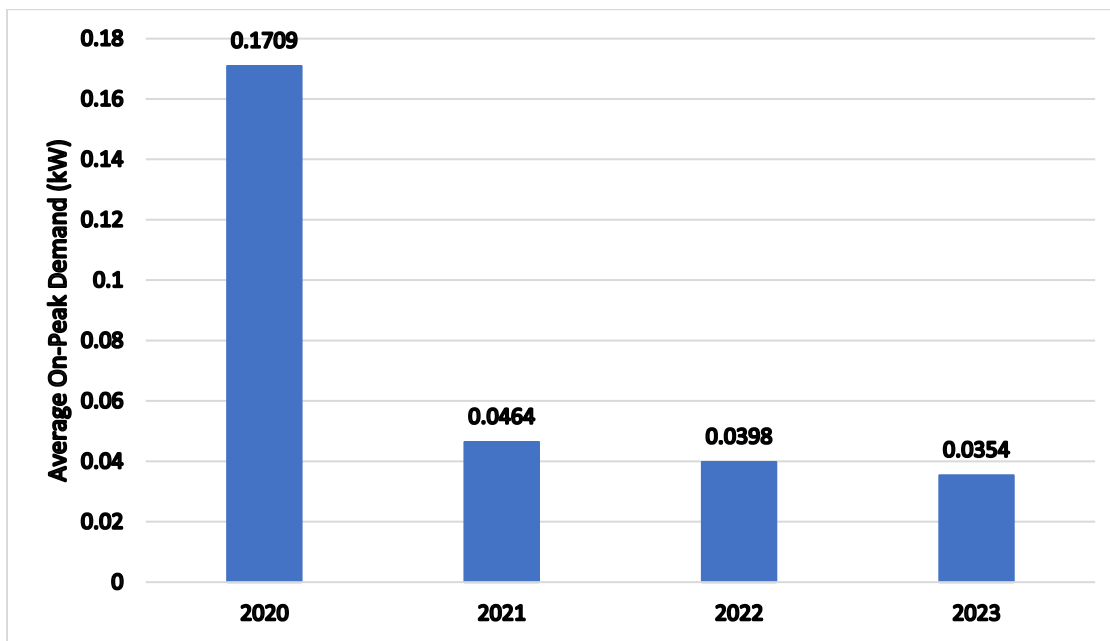


Figure 6. EV Load During On-Peak Hours Over Time



ii. Lessons Learned

As expected, there are a number of key lessons learned that could be applied to future and/or permanent programs. Perhaps the most notable takeaway is that customers are willing to alter their EV charging behaviors in exchange for a modest incentive. Further, continued messaging and participant outreach can drive continued improvement in the shift of EV charging load, with many customers adopting a “set it and forget it” approach to participating by scheduling

their charger or their EV itself to charge only during pre-set time windows. The program has not yet driven 100% of pre-enrollment on-peak charging to off peak time periods. This is primarily a result of a small number of participants failing to change their behaviors. The Companies believe that two program modifications would help.

First, removing the \$500 upfront rebate associated with the pilot would help to drive the distinction between participants who primarily sought help with starting their EV journey, and those who were willing to shape charging behavior in exchange for quarterly payments. Second, the program could seek to reduce the number of “strikes” allowed before a customer loses their monthly credit, thus reducing expense associated with participants who are less disciplined about charging off peak. The Companies have also received feedback from customers that bill credits – in lieu of gift cards – are a preferred method of receiving participation awards.

Finally, through the ET Pilots, the Companies are able to evaluate and better understand the challenges in obtaining charging data from participants. A key takeaway is that multiple data acquisition and analytics methods are needed to ensure that a wide range of customers can participate and engage in data exchange with the Companies. For example, in an effort to control costs, the pilot leveraged existing channels through which AMI meter data was shared with a program vendor for purposes of disaggregation. Because that cost effective data feed was not built specifically for the pilot, it did not include the ability to send data for customers on all residential rates. To account for this, the Companies also engaged a vendor to deliver a vehicle telematics-based solution. While many customers successfully participated through the telematics approach, some were unwilling to grant telematics-based data access. In other cases, automotive OEMs have begun to restrict 3rd party access to telematics data. Additionally, the retirement of 3G wireless networks, on which certain older EVs communicated, also disrupted the flow of charging data for

certain participants. The Companies believe that leveraging various methods to monitor participant charging behavior will ensure that customers can participate in EV load management regardless of challenges such as these, thus enhancing the customer experience and improving the Companies' electrification programs.

IV. Conclusion

The Companies' implementation of the ET Pilots thus far has been very successful. Utilization of the Park & Plug public charging infrastructure is increasing, and its deployment has taught the Companies how to effectively support market providers of similar infrastructure. In order to continue collecting data from the stations to improve the Companies' EV efforts, the Companies anticipate requesting authority to continue operating the thirty currently approved sites for an additional year.

The Residential EV Charging pilot has demonstrated the efficacy of credits in motivating customers to charge their EVs during off peak hours and is expected to inform future, permanent load management programs. Given the success of the Residential EV Charging pilot, the Companies anticipate proposing a program modeled on the pilot. Additionally, in order to provide continuity for pilot participants and to prevent regression in their charging behavior, the Companies likewise expect to request an extension of the pilot until a permanent program can be approved and implemented.

The Companies look forward to continued engagement with stakeholders to learn about their experience and discuss how lessons learned from the ET Pilots can inform EV programming for the Companies and their customers going forward.

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October 30, 2023

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**Application of Duke Energy Carolinas, LLC for Approval of Proposed Electric Transportation Pilot and An Accounting Order to Defer Capital and Operating Expenses Docket
No. 2018-321-E**

Annual Electric Transportation Pilot Report Pursuant to Order Nos. 2020-645 and 2020-646 – Stakeholder Session Slide Deck

Dear Ms. Boyd:

In connection with the above-referenced dockets, attached please find the stakeholder session slide deck referenced in Duke Energy Carolinas, LLC's and Duke Energy Progress, LLC's (the "Companies") Annual Electric Transportation Pilot Report, which was filed with the Commission on October 27, 2023. The slide deck was inadvertently omitted from the Companies' previous filing.

Kind regards,

A handwritten signature in blue ink that reads "Katie M. Brown".

Katie M. Brown

Attachment

cc w/enc (via email): Parties of Record

Transportation Electrification

October 2023

South Carolina Stakeholder Updates



BUILDING A SMARTER ENERGY FUTURE®



October 2023 Meeting Agenda

- Introduction Cory Gordon
- Park & Plug DC Fast Charging Loyd Graves
- Residential EV Charging - Off Peak Credit Lori Plothow
- Questions MoNiqueka Smith

Summary of Associated Orders

Through Order Nos. 2020-645 and 2020-646 in Docket Nos. 2018-321-E and 2018-322-E, which approved the Companies' ET Pilots, the Commission directed that the Companies conduct the following activities:

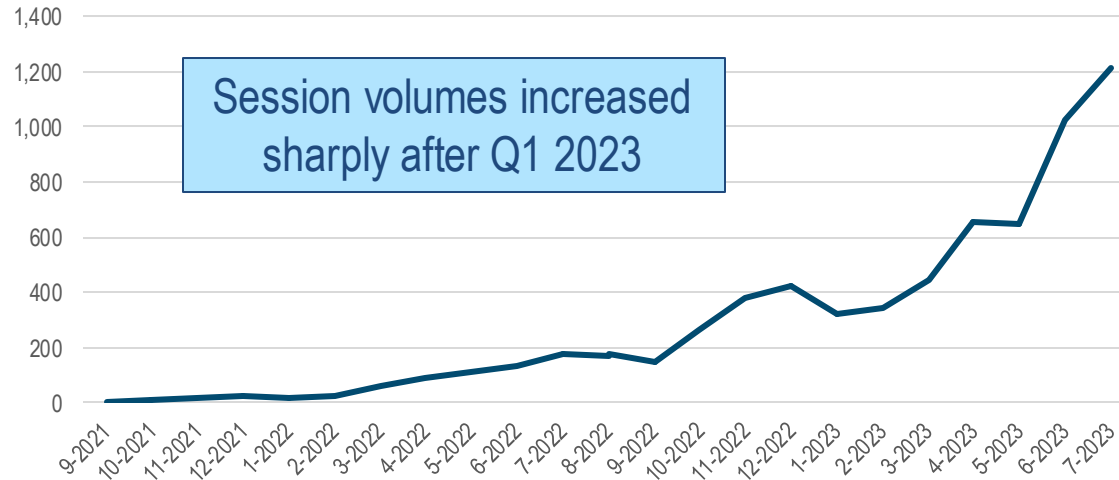
- Conduct an ongoing stakeholder engagement process with interested parties in an effort to understand each parties' experience with the ET Pilot and the effectiveness of the ET Pilots' programs;
- Host annual meetings to provide stakeholders with updates on the ET Pilots' programs, and permit stakeholders to ask questions and provide feedback;
- Document the annual stakeholder meetings and provide summaries to the Commission as part of the Company's annual and final ET Pilot report; and
- Submit to the Commission on an annual basis reports containing: (a) data on the number of site hosts flowing through fast Charge Fees to drivers, the number of site hosts using alternative pricing, and aggregate amounts of such fees collected by charger by year; and (b) data on the aggregate amount collected under such arrangements by charger by year provided from site hosts offering alternative pricing mechanisms for drivers.

Park and Plug Public DC Fast Charging

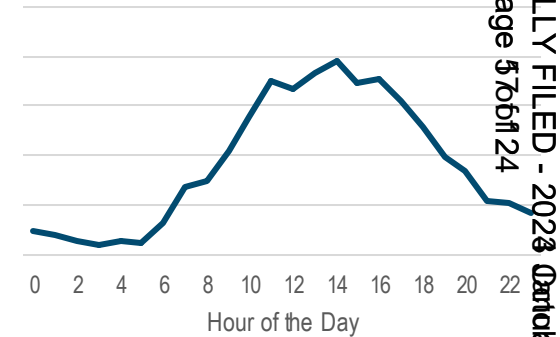
Program Summary

- 60 Chargers (40 DEC / 20 DEP)
- Each site to have (2) 100+ kW chargers
- Drivers pay Fast Charge Fee (FCF) reflective of statewide average
 - Site host may elect to raise/lower FCF

Number of Charging Sessions - Total System



24 Hr Load Curve



- DCFC usage is notable during normal hours of long-distance driving
- Conversely, nearly non-existent overnight usage

Park and Plug Public DC Fast Charging – Program Update



Program Summary

- Completed:
 - 21 sites
 - 42 chargers
- Remaining:
 - 9 sites
 - 18 chargers
- No hosts have opted for Alternative Pricing
- Total of 182 MWh charged through July
 - Enabled ~ 600,000 miles of driving



Most Used Chargers

- Hamer (I-95)
- Lynchburg (I-95)
- Spartanburg (I-85)
- Powdersville (I-85)
- Inman (I-26)



Risk Factors

- Transformers & panel boards
- Permitting & easements



Next Steps

- Anticipate request to extend operation of sites & determine program future
 - No additional sites

Residential EV Charging – Off Peak Credit

Program Summary

- Offers customers payment in exchange for monitoring their EV charging behavior and shifting their charging to off-peak hours
 - 400 customer limit
 - Duke Energy Carolinas (DEC) only
 - Initial \$500 payment
 - \$13.87 Monthly Credit
 - Prepaid Mastercard (Quarterly)
 - Opt-out 3x per month

Enrollment Summary

- Application Window Closed November 2021
- 310 Max Enrollment
- 243 Currently Being Tracked
- Reasons for Unenrollment
 - Participant relocated
 - Changes in ability to acquire data



Enroll in Park & Plug today.

Already have a level 2 electric vehicle (EV) home charger? Sign up for Park & Plug and you can get up to \$1,000! We're looking for EV drivers to help us learn about charging behavior. You get \$500 upfront and up to \$500 more over the next three years.

The Park & Plug pilot program is a way we can all work together to help expand EV infrastructure.

APPLY NOW

Hurry, spots are limited and the deadline is Dec. 18, 2020.
Questions? Please email us at ParkandPlugSC@duke-energy.com.

By participating, you help:



Foster cleaner transportation



Provide data on EV charging behavior

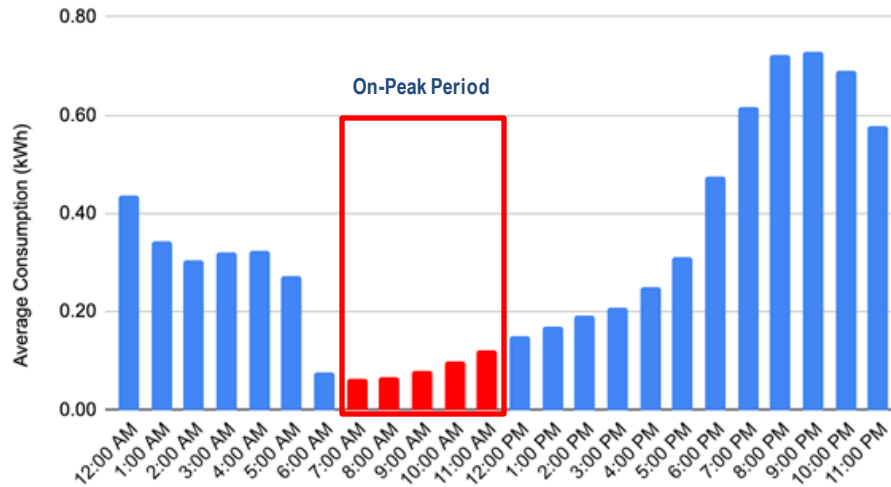


Influence future EV infrastructure

We remain committed to delivering reliable power while helping to protect the health and safety of our employees, customers and everyone around us. Learn more about our ongoing response to COVID-19 at dukeenergyupdates.com

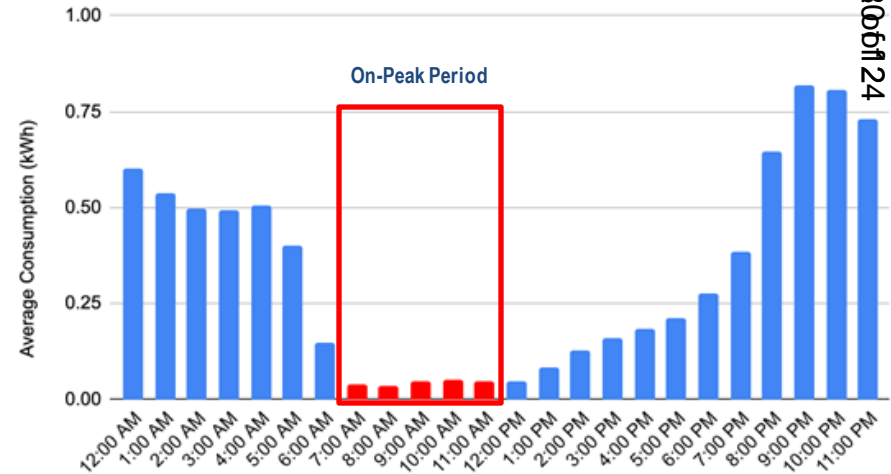
Off Peak Credit – Results – kWh Consumption

Winter Average EV Load Shape - 2020



- Pre-Enrollment Winter Hours
 - 6% of EV consumption occurred On-Peak
 - 49% of participants charged their EV On-Peak

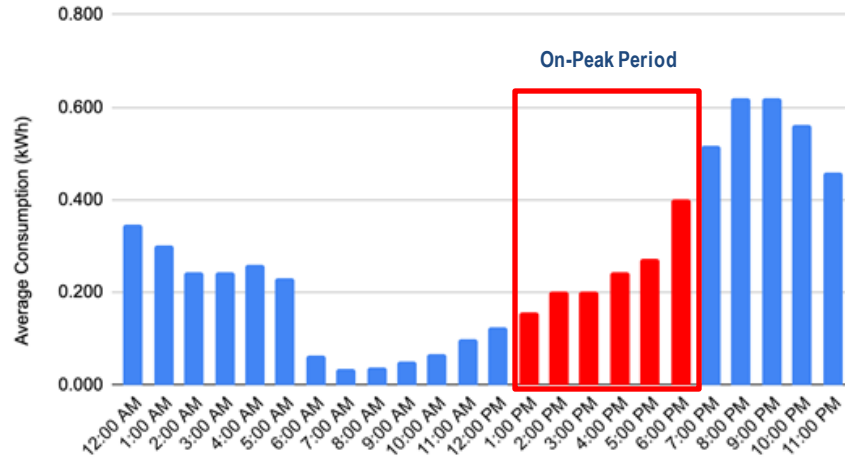
Winter Average EV Load Shape - 2023



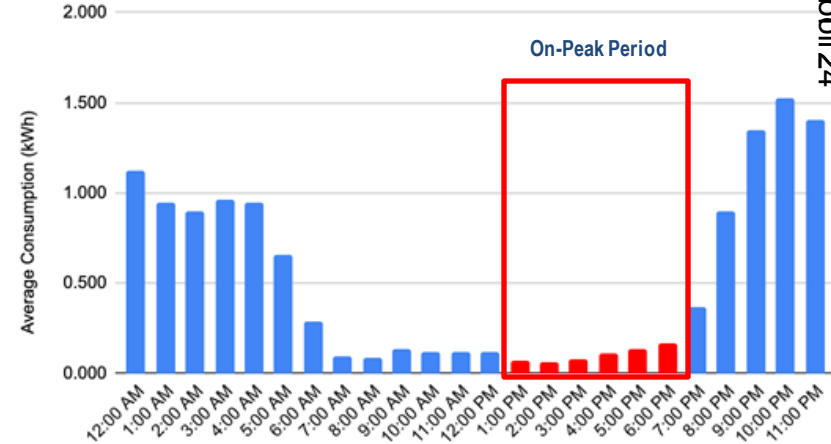
- Post-Enrollment Winter Hours
 - 50% (improvement) reduction in On-Peak EV consumption
 - 60% reduction in participants charging On-Peak

Off Peak Credit – Results – kWh Consumption

Summer Average EV Load Shape - 2020



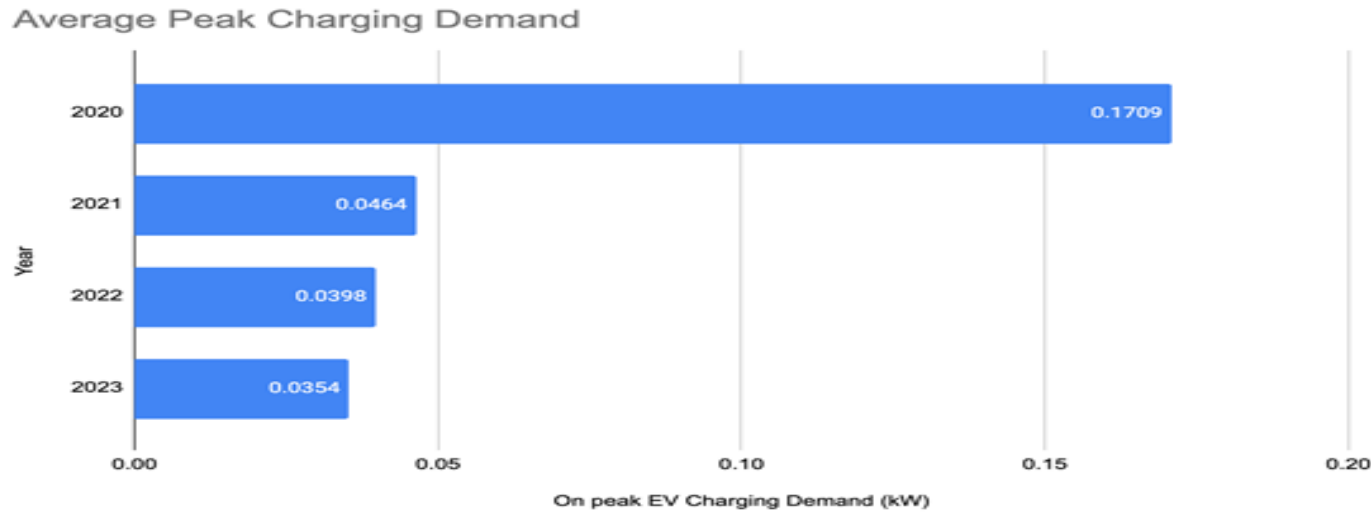
Summer Average EV Load Shape - 2023



- Pre-Enrollment Summer Hours
 - 23% of EV consumption occurred On-Peak
 - 78% of participants charged their EV On-Peak

- Post-Enrollment Summer Hours
 - 78% improvement (reduction) in On-Peak EV consumption
 - 49% reduction in participants charging On-Peak

Off Peak Credit – Progression Over Time – kW Demand



Year	On Peak EV Demand	Percent Reduction
2020	0.1709	
2021	0.0464	72.85%
2022	0.0398	76.71%
2023	0.0354	79.29%

Lessons Learned & Next Steps

- Summer hours are impacted more than winter hours
- Multiple methods to measure EV charging are needed
- High Strike #
 - Customers can get as many as 3 strikes and still receive incentive.
 - Given customers on average only charge 2 times a week this allows customers to charge >30% of instances on peak and still receive an incentive.
 - Reducing the strike number could show further improvement in actual shift.
- Load shifting is persistent.
- Per participant survey, customers would prefer a bill credit to a pre-paid credit card.
- Next Steps
 - Anticipate filing permanent Off-Peak Credit Program
 - Request to extend current program until new program is available

